

# SEQUENCE LISTING

<110> Chadwick, Brian Paul  
Frischauf, Anna-Maria

<120> METHODS AND COMPOSITIONS RELATING TO CD39-LIKE  
POLYPEPTIDES AND NUCLEIC ACIDS

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<140> 09/240,639

<141> 1999-01-29

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<170> PatentIn Ver. 2.0

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Lys Tyr Gln Tyr Gly Gly Asn Gln Glu Gly Glu Val Gly Phe Glu Pro	
290 295 300	
tgc tat gcc gaa gtg ctg agg gtg gta cga gga aaa ctt cac cag cca	1200
Cys Tyr Ala Glu Val Leu Arg Val Val Arg Gly Lys Leu His Gln Pro	
305 310 315	
gag gag gtc cag aga ggt tcc ttc tat gct ttc tct tac tat tat gac	1248
Glu Glu Val Gln Arg Gly Ser Phe Tyr Ala Phe Ser Tyr Tyr Tyr Asp	
320 325 330	

cga gct gtt gac aca gac atg att gat tat gaa aag ggg ggt att tta 1296  
 Arg Ala Val Asp Thr Asp Met Ile Asp Tyr Glu Lys Gly Gly Ile Leu  
 335 340 345 350  
 aaa gtt gaa gat ttt gaa aga aaa gcc agg gaa gtg tgt gat aac ttg 1344  
 Lys Val Glu Asp Phe Glu Arg Lys Ala Arg Glu Val Cys Asp Asn Leu  
 355 360 365  
 gaa aac ttc acc tca ggc agt cct ttc ctg tgc atg gat ctc agc tac 1392  
 Glu Asn Phe Thr Ser Gly Ser Pro Phe Leu Cys Met Asp Leu Ser Tyr  
 370 375 380  
 atc aca gcc ctg tta aag gat ggc ttt ggc ttt gca gac agc aca gtc 1440  
 Ile Thr Ala Leu Leu Lys Asp Gly Phe Gly Phe Ala Asp Ser Thr Val  
 385 390 395  
 tta cag ctc aca aag aaa gtg aac aac ata gag acg ggc tgg gcc ttg 1488  
 Leu Gln Leu Thr Lys Lys Val Asn Asn Ile Glu Thr Gly Trp Ala Leu  
 400 405 410  
 ggg gcc acc ttt cac ctg ttg cag tct ctg ggc atc tcc cat 1530  
 Gly Ala Thr Phe His Leu Leu Gln Ser Leu Gly Ile Ser His  
 415 420 425  
 tgaggccacg tacttctctg gagacctgca ttgccaaca cctttttaag gggaggagag 1590  
 agcacttagt ttctgaacta gtctgggaca tctctggactt gagcctagag atttaggttt 1650  
 aattaatttt acacatctaa tgtgaactgc tgccctaacca ctcaagagta cacagctggc 1710  
 accagagcat cacagagagc cctgtgagcc aaaaagtata gttttggaac ttaaccttgg 1770  
 agtgagagcc caggggacagg tccctggaaa ccaaagaaaa atcgatttc aaccttttga 1830  
 gtgcctcatt ccactgaata tttaaatttt cctcttaaat ggtaactga cttattgcaa 1890  
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 atctgcaccc acctccctg aaaaagagag aaaaaaaaa aaaaaaaa 1998

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 <211> 428  
 <212> PRT  
 <213> Homo sapiens

<400> 6  
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 Ile Phe Leu Ser Ser Met Cys Pro Ile Asn Val Ser Ala Ser Thr Leu  
 35 40 45  
 Tyr Gly Ile Met Phe Asp Ala Gly Ser Thr Gly Thr Arg Ile His Val  
 50 55 60

Tyr Thr Phe Val Gln Lys Met Pro Gly Gln Leu Pro Ile Leu Glu Gly  
 65 70 75 80  
 Glu Val Phe Asp Ser Val Lys Pro Gly Leu Ser Ala Phe Val Asp Gln  
 85 90 95  
 Pro Lys Gln Gly Ala Glu Thr Val Gln Gly Leu Leu Glu Val Ala Lys  
 100 105 110  
 Asp Ser Ile Pro Arg Ser His Trp Lys Lys Thr Pro Val Val Leu Lys  
 115 120 125  
 Ala Thr Ala Gly Leu Arg Leu Leu Pro Glu His Lys Ala Lys Ala Leu  
 130 135 140  
 Leu Phe Glu Val Lys Glu Ile Phe Arg Lys Ser Pro Phe Leu Val Pro  
 145 150 155 160  
 Lys Gly Ser Val Ser Ile Met Asp Gly Ser Asp Glu Gly Ile Leu Ala  
 165 170 175  
 Trp Val Thr Val Asn Phe Leu Thr Gly Gln Leu His Gly His Arg Gln  
 180 185 190  
 Glu Thr Val Gly Thr Leu Asp Leu Gly Gly Ala Ser Thr Gln Ile Thr  
 195 200 205  
 Phe Leu Pro Gln Phe Glu Lys Thr Leu Glu Gln Thr Pro Arg Gly Tyr  
 210 215 220  
 Leu Thr Ser Phe Glu Met Phe Asn Ser Thr Tyr Lys Leu Tyr Thr His  
 225 230 235 240  
 Ser Tyr Leu Gly Phe Gly Leu Lys Ala Ala Arg Leu Ala Thr Leu Gly  
 245 250 255  
 Ala Leu Glu Thr Glu Gly Thr Asp Gly His Thr Phe Arg Ser Ala Cys  
 260 265 270  
 Leu Pro Arg Trp Leu Glu Ala Glu Trp Ile Phe Gly Gly Val Lys Tyr  
 275 280 285  
 Gln Tyr Gly Gly Asn Gln Glu Gly Glu Val Gly Phe Glu Pro Cys Tyr  
 290 295 300  
 Ala Glu Val Leu Arg Val Val Arg Gly Lys Leu His Gln Pro Glu Glu  
 305 310 315 320  
 Val Gln Arg Gly Ser Phe Tyr Ala Phe Ser Tyr Tyr Tyr Asp Arg Ala  
 325 330 335  
 Val Asp Thr Asp Met Ile Asp Tyr Glu Lys Gly Gly Ile Leu Lys Val  
 340 345 350  
 Glu Asp Phe Glu Arg Lys Ala Arg Glu Val Cys Asp Asn Leu Glu Asn  
 355 360 365

Phe Thr Ser Gly Ser Pro Phe Leu Cys Met Asp Leu Ser Tyr Ile Thr  
 370 375 380

Ala Leu Leu Lys Asp Gly Phe Gly Phe Ala Asp Ser Thr Val Leu Gln  
 385 390 395 400

Leu Thr Lys Lys Val Asn Asn Ile Glu Thr Gly Trp Ala Leu Gly Ala  
 405 410 415

Thr Phe His Leu Leu Gln Ser Leu Gly Ile Ser His  
 420 425

<210> 7

<211> 2119

<212> DNA

<213> Mus musculus

<220>

<221> CDS

<222> (205)..(1599)

<400> 7

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aagggaggggc ctgaaggacc tccacaggag tgtgagcagc actgcttcag caacaaagcc 180

tcagggtccac atcttgggaa gaat atg gcc act tcc tgg ggg gct gtc ttc 231  
 Met Ala Thr Ser Trp Gly Ala Val Phe  
 1 5

atg ctg atc ata gcc tgc gtt ggc agc act gtc ttc tac aga gaa cag 279  
 Met Leu Ile Ile Ala Cys Val Gly Ser Thr Val Phe Tyr Arg Glu Gln  
 10 15 20 25

cag acc tgg ttt gaa ggt gtc ttc ttg tct tcc atg tgc ccc att aat 327  
 Gln Thr Trp Phe Glu Gly Val Phe Leu Ser Ser Met Cys Pro Ile Asn  
 30 35 40

gtc agt gcc ggc acc ttt tat gga att atg ttt gat gcg ggc agc act 375  
 Val Ser Ala Gly Thr Phe Tyr Gly Ile Met Phe Asp Ala Gly Ser Thr  
 45 50 55

gga gct cgg att cat gtt tac act ttt gtg cag aaa aca gca gga cag 423  
 Gly Ala Arg Ile His Val Tyr Thr Phe Val Gln Lys Thr Ala Gly Gln  
 60 65 70

ctc ccc ttt ctg gaa ggt gaa att ttt gat tct gtg aag ccg gga ctt 471  
 Leu Pro Phe Leu Glu Gly Glu Ile Phe Asp Ser Val Lys Pro Gly Leu  
 75 80 85

tct gct ttt gtg gat cag ccc aaa cag ggt gct gag act gtc cag gag 519  
 Ser Ala Phe Val Asp Gln Pro Lys Gln Gly Ala Glu Thr Val Gln Glu  
 90 95 100 105

ctc ttg gag gtg gcc aaa gac tcg atc ccc aga agc cac tgg gaa agg	567
Leu Leu Glu Val Ala Lys Asp Ser Ile Pro Arg Ser His Trp Glu Arg	
110 115 120	
acc ccg gtg gtt ctg aaa gca acg gcc gga ctc cgt ttg ctg cct gag	615
Thr Pro Val Val Leu Lys Ala Thr Ala Gly Leu Arg Leu Leu Pro Glu	
125 130 135	
cag aaa gcc cag gct ctg ctc ttg gag gta gag gag atc ttc aag aat	663
Gln Lys Ala Gln Ala Leu Leu Leu Glu Val Glu Glu Ile Phe Lys Asn	
140 145 150	
tca cct ttc ctg gtc cca gat gcc agc gtt agc atc atg gat ggg tcc	711
Ser Pro Phe Leu Val Pro Asp Gly Ser Val Ser Ile Met Asp Gly Ser	
155 160 165	
tat gaa ggc ata cta gcc tgg gtt acc gtg aac ttt cta aca ggt cag	759
Tyr Glu Gly Ile Leu Ala Trp Val Thr Val Asn Phe Leu Thr Gly Gln	
170 175 180 185	
ctg cat ggt cgt gcc cag gag act gtg ggg acc ctt gac ctg ggg ggt	807
Leu His Gly Arg Gly Gln Glu Thr Val Gly Thr Leu Asp Leu Gly Gly	
190 195 200	
gcc tcc acc caa atc acg ttt cta ccc cag ttt gag aaa acc ctg gaa	855
Ala Ser Thr Pro Arg Ile Thr Phe Leu Pro Gln Phe Glu Lys Thr Leu Glu	
205 210 215	
caa aca cct agg ggc tac ctc act tcc ttt gag atg ttt aac agc act	903
Gln Thr Pro Arg Gly Tyr Leu Thr Ser Phe Glu Met Phe Asn Ser Thr	
220 225 230	
ttt aag ctc tat aca cat agt tac ttg gga ttt gga ctg aaa gct gca	951
Phe Lys Leu Tyr Thr His Ser Tyr Leu Gly Phe Gly Leu Lys Ala Ala	
235 240 245	
aga ctg gca act ctg gga gcc ctg gaa gca aaa ggg act gat gga cat	999
Arg Leu Ala Thr Leu Gly Ala Leu Glu Ala Lys Gly Thr Asp Gly His	
250 255 260 265	
acg ttt cga agt gcc tgt tta cca aga tgg ttg gaa gca gag tgg atc	1047
Thr Phe Arg Ser Ala Cys Leu Pro Arg Trp Leu Glu Ala Glu Trp Ile	
270 275 280	
ttt ggg ggt gtg aaa tac cag tat ggt ggt aac caa gaa ggg gag atg	1095
Phe Gly Gly Val Lys Tyr Gln Tyr Gly Gly Asn Gln Glu Gly Glu Met	
285 290 295	
ggc ttt gaa ccc tgc tat gcg gaa gtg ctg agg gta gta cag ggg aaa	1143
Gly Phe Glu Pro Cys Tyr Ala Glu Val Leu Arg Val Val Gln Gly Lys	
300 305 310	
ctt cac cag cca gaa gaa gtc cga gga agc gcc ttc tac gct ttc tct	1191
Leu His Gln Pro Glu Glu Val Arg Gly Ser Ala Phe Tyr Ala Phe Ser	
315 320 325	



tac tac tac gat cga gcc gct gac aca cac ttg atc gat tat gaa aag 1239  
 Tyr Tyr Tyr Asp Arg Ala Ala Asp Thr His Leu Ile Asp Tyr Glu Lys  
 330 335 340 345  
 ggc ggg gtt tta aaa gtt gaa gat ttt gaa aga aaa gcc aga gaa gtg 1287  
 Gly Gly Val Leu Lys Val Glu Asp Phe Glu Arg Lys Ala Arg Glu Val  
 350 355 360  
 tgt gac aac ttg ggg agc ttc tcc tcg ggc agt cct ttc ctc tgc atg 1335  
 Cys Asp Asn Leu Gly Ser Phe Ser Ser Gly Ser Pro Phe Leu Cys Met  
 365 370 375  
 gac ctc act tac atc aca gcc ctg ttg aaa gat ggt ttg ggc ttt gcc 1383  
 Asp Leu Thr Tyr Ile Thr Ala Leu Leu Lys Asp Gly Leu Gly Phe Ala  
 380 385 390  
 gaa cgg cac cct ctt aca gct cac aaa gaa agt gaa caa cat aga gac 1431  
 Glu Arg His Pro Leu Thr Ala His Lys Glu Ser Glu Gln His Arg Asp  
 395 400 405  
 tgg ttg ggc ctt ggg ggc cac ctt tca cct gct cca gtc tct ggg cat 1479  
 Trp Leu Gly Leu Gly Gly His Leu Ser Pro Ala Pro Val Ser Gly His  
 410 415 420 425  
 cac cag ctg agg cca agc tcc acc tct gaa gcc tgc att tct gaa cca 1527  
 His Gln Leu Arg Pro Ser Ser Thr Ser Glu Ala Cys Ile Ser Glu Pro  
 430 435 440  
 gtt ttc tca cag gaa ggc gtg gac tca gag aca ttt tct gac ctc tct 1575  
 Val Phe Ser Gln Glu Gly Val Asp Ser Glu Thr Phe Ser Asp Leu Ser  
 445 450 455  
 gga aaa gcc tgg ccc gaa acc cgt taactgggtt tataaggagg gaggggtttt 1629  
 Gly Lys Ala Trp Pro Glu Thr Arg  
 460 465  
 tagatgagtc ttgctcttga gcctagtgat ttgggcttca atgatttgca catctaatgt 1689  
 gaatagctcc taaccacttg gtgggtgcat ggctggcacc agactgtataa tcttttggga 1749  
 ttctttgtac agagtccctgc aaaggaaaaa agagaaaagg tttggaactc catgctagat 1809  
 tgcgagttca gagacaggtc cctggggacc aaagaacaat ctcgtttcaa cccttgatg 1869  
 cctcattgct ttgaatggat tcatttttgc ttataagctg atttactgaa atcccataac 1929  
 ccatcaatgc tgttaattttt ttcttctcta cccttattac attccctacc ctaaaagcct 1989  
 gggggaaata cctggtttttg ctcccatct ataattgaga aagagggggg aaaagatact 2049  
 gtattagaat ttgtgtgatc ctgtggcaca atagatcaac caaccattt aaagcttaaa 2109  
 aaaaaaaaaa 2119

<210> 8  
 <211> 465  
 <212> PRT

<213> Mus musculus

<400> 8

Met Ala Thr Ser Trp Gly Ala Val Phe Met Leu Ile Ile Ala Cys Val  
 1 5 10 15  
 Gly Ser Thr Val Phe Tyr Arg Glu Gln Gln Thr Trp Phe Glu Gly Val  
 20 25 30  
 Phe Leu Ser Ser Met Cys Pro Ile Asn Val Ser Ala Gly Thr Phe Tyr  
 35 40 45  
 Gly Ile Met Phe Asp Ala Gly Ser Thr Gly Ala Arg Ile His Val Tyr  
 50 55 60  
 Thr Phe Val Gln Lys Thr Ala Gly Gln Leu Pro Phe Leu Glu Gly Glu  
 65 70 75 80  
 Ile Phe Asp Ser Val Lys Pro Gly Leu Ser Ala Phe Val Asp Gln Pro  
 85 90 95  
 Lys Gln Gly Ala Glu Thr Val Gln Glu Leu Leu Glu Val Ala Lys Asp  
 100 105 110  
 Ser Ile Pro Arg Ser His Trp Glu Arg Thr Pro Val Val Leu Lys Ala  
 115 120 125  
 Thr Ala Gly Leu Arg Leu Leu Pro Glu Gln Lys Ala Gln Ala Leu Leu  
 130 135 140  
 Leu Glu Val Glu Glu Ile Phe Lys Asn Ser Pro Phe Leu Val Pro Asp  
 145 150 155 160  
 Gly Ser Val Ser Ile Met Asp Gly Ser Tyr Glu Gly Ile Leu Ala Trp  
 165 170 175  
 Val Thr Val Asn Phe Leu Thr Gly Gln Leu His Gly Arg Gly Gln Glu  
 180 185 190  
 Thr Val Gly Thr Leu Asp Leu Gly Gly Ala Ser Thr Gln Ile Thr Phe  
 195 200 205  
 Leu Pro Gln Phe Glu Lys Thr Leu Glu Gln Thr Pro Arg Gly Tyr Leu  
 210 215 220  
 Thr Ser Phe Glu Met Phe Asn Ser Thr Phe Lys Leu Tyr Thr His Ser  
 225 230 235 240  
 Tyr Leu Gly Phe Gly Leu Lys Ala Ala Arg Leu Ala Thr Leu Gly Ala  
 245 250 255  
 Leu Glu Ala Lys Gly Thr Asp Gly His Thr Phe Arg Ser Ala Cys Leu  
 260 265 270  
 Pro Arg Trp Leu Glu Ala Glu Trp Ile Phe Gly Gly Val Lys Tyr Gln  
 275 280 285

Tyr Gly Gly Asn Gln Glu Gly Glu Met Gly Phe Glu Pro Cys Tyr Ala  
290 295 300

Glu Val Leu Arg Val Val Gln Gly Lys Leu His Gln Pro Glu Glu Val  
305 310 315 320

Arg Gly Ser Ala Phe Tyr Ala Phe Ser Tyr Tyr Asp Arg Ala Ala  
325 330 335

Asp Thr His Leu Ile Asp Tyr Glu Lys Gly Gly Val Leu Lys Val Glu  
340 345 350

Asp Phe Glu Arg Lys Ala Arg Glu Val Cys Asp Asn Leu Gly Ser Phe  
355 360 365

Ser Ser Gly Ser Pro Phe Leu Cys Met Asp Leu Thr Tyr Ile Thr Ala  
370 375 380

Leu Leu Lys Asp Gly Leu Gly Phe Ala Glu Arg His Pro Leu Thr Ala  
385 390 395 400

His Lys Glu Ser Glu Gln His Arg Asp Trp Leu Gly Leu Gly Gly His  
405 410 415

Leu Ser Pro Ala Pro Val Ser Gly His His Gln Leu Arg Pro Ser Ser  
420 425 430

Thr Ser Glu Ala Cys Ile Ser Glu Pro Val Phe Ser Gln Glu Gly Val  
435 440 445

Asp Ser Glu Thr Phe Ser Asp Leu Ser Gly Lys Ala Trp Pro Glu Thr  
450 455 460

Arg  
465

<210> 9

<211> 428

<212> PRT

<213> Homo sapiens

<400> 9

Met Ala Thr Ser Trp Gly Thr Val Phe Phe Met Leu Val Val Ser Cys  
1 5 10 15

Val Cys Ser Ala Val Ser His Arg Asn Gln Gln Thr Trp Phe Glu Gly  
20 25 30

Ile Phe Leu Ser Ser Met Cys Pro Ile Asn Val Ser Ala Ser Thr Leu  
35 40 45

Tyr Gly Ile Met Phe Asp Ala Gly Ser Thr Gly Thr Arg Ile His Val  
50 55 60

Tyr Thr Phe Val Gln Lys Met Pro Gly Gln Leu Pro Ile Leu Glu Gly  
65 70 75 80

Glu Val Phe Asp Ser Val Lys Pro Gly Leu Ser Ala Phe Val Asp Gln  
                             85                            90                            95  
 Pro Lys Gln Gly Ala Glu Thr Val Gln Gly Leu Leu Glu Val Ala Lys  
                             100                            105                            110  
 Asp Ser Ile Pro Arg Ser His Trp Lys Lys Thr Pro Val Val Leu Lys  
                             115                            120                            125  
 Ala Thr Ala Gly Leu Arg Leu Leu Pro Glu His Lys Ala Lys Ala Leu  
                             130                            135                            140  
 Leu Phe Glu Val Lys Glu Ile Phe Arg Lys Ser Pro Phe Leu Val Pro  
                             145                            150                            155                            160  
 Lys Gly Ser Val Ser Ile Met Asp Gly Ser Asp Glu Gly Ile Leu Ala  
                             165                            170                            175  
 Trp Val Thr Val Asn Phe Leu Thr Gly Gln Leu His Gly His Arg Gln  
                             180                            185                            190  
 Glu Thr Val Gly Thr Leu Asp Leu Gly Gly Ala Ser Thr Gln Ile Thr  
                             195                            200                            205  
 Phe Leu Pro Gln Phe Glu Lys Thr Leu Glu Gln Thr Pro Arg Gly Tyr  
                             210                            215                            220  
 Leu Thr Ser Phe Glu Met Phe Asn Ser Thr Tyr Lys Leu Tyr Thr His  
                             225                            230                            235                            240  
 Ser Tyr Leu Gly Phe Gly Leu Lys Ala Ala Arg Leu Ala Thr Leu Gly  
                             245                            250                            255  
 Ala Leu Glu Thr Glu Gly Thr Asp Gly His Thr Phe Arg Ser Ala Cys  
                             260                            265                            270  
 Leu Pro Arg Trp Leu Glu Ala Glu Trp Ile Phe Gly Gly Val Lys Tyr  
                             275                            280                            285  
 Gln Tyr Gly Gly Asn Gln Glu Gly Glu Val Gly Phe Glu Pro Cys Tyr  
                             290                            295                            300  
 Ala Glu Val Leu Arg Val Val Arg Gly Lys Leu His Gln Pro Glu Glu  
                             305                            310                            315                            320  
 Val Gln Arg Gly Ser Phe Tyr Ala Phe Ser Tyr Tyr Tyr Asp Arg Ala  
                             325                            330                            335  
 Val Asp Thr Asp Met Ile Asp Tyr Glu Lys Gly Gly Ile Leu Lys Val  
                             340                            345                            350  
 Glu Asp Phe Glu Arg Lys Ala Arg Glu Val Cys Asp Asn Leu Glu Asn  
                             355                            360                            365  
 Phe Thr Ser Gly Ser Pro Phe Leu Cys Met Asp Leu Ser Tyr Ile Thr  
                             370                            375                            380

Ala Leu Leu Lys Asp Gly Phe Gly Phe Ala Asp Ser Thr Val Leu Gln  
385 390 395 400

Leu Thr Lys Lys Val Asn Asn Ile Glu Thr Gly Trp Ala Leu Gly Ala  
405 410 415

Thr Phe His Leu Leu Gln Ser Leu Gly Ile Ser His  
420 425

<210> 10

<211> 455

<212> PRT

<213> P. sativum

<400> 10

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Ala Ile Thr Ser Ser Gln Tyr Leu Gly Asn Asn Leu Leu Thr Ser Arg  
20 25 30

Lys Ile Phe Leu Lys Gln Glu Glu Ile Ser Ser Tyr Ala Val Val Phe  
35 40 45

Asp Ala Gly Ser Thr Gly Ser Arg Ile His Val Tyr His Phe Asn Gln  
50 55 60

Asn Leu Asp Leu Leu His Ile Gly Lys Gly Val Glu Tyr Tyr Asn Lys  
65 70 75 80

Ile Thr Pro Gly Leu Ser Ser Tyr Ala Asn Asn Pro Glu Gln Ala Ala  
85 90 95

Lys Ser Leu Ile Pro Leu Leu Glu Gln Ala Glu Asp Val Val Pro Asp  
100 105 110

Asp Leu Gln Pro Lys Thr Pro Val Arg Leu Gly Ala Thr Ala Gly Leu  
115 120 125

Arg Leu Leu Asn Gly Asp Ala Ser Glu Lys Ile Leu Gln Ser Val Arg  
130 135 140

Asp Met Leu Ser Asn Arg Ser Thr Phe Asn Val Gln Pro Asp Ala Val  
145 150 155 160

Ser Ile Ile Asp Gly Thr Gln Glu Gly Ser Tyr Leu Trp Val Thr Val  
165 170 175

Asn Tyr Ala Leu Gly Asn Leu Gly Lys Lys Tyr Thr Lys Thr Val Gly  
180 185 190

Val Ile Asp Leu Gly Gly Gly Ser Val Gln Met Ala Tyr Ala Val Ser  
195 200 205

Lys Lys Thr Ala Lys Asn Ala Pro Lys Val Ala Asp Gly Asp Asp Pro  
210 215 220

Tyr Ile Lys Lys Val Val Leu Lys Gly Ile Pro Tyr Asp Leu Tyr Val  
 225 230 235 240  
 His Ser Tyr Leu His Phe Gly Arg Glu Ala Ser Arg Ala Glu Ile Leu  
 245 250 255  
 Lys Leu Thr Pro Arg Ser Pro Asn Pro Cys Leu Leu Ala Gly Phe Asn  
 260 265 270  
 Gly Ile Tyr Thr Tyr Ser Gly Glu Glu Phe Lys Ala Thr Ala Tyr Thr  
 275 280 285  
 Ser Gly Ala Asn Phe Asn Lys Cys Lys Asn Thr Ile Arg Lys Ala Leu  
 290 295 300  
 Lys Leu Asn Tyr Pro Cys Pro Tyr Gln Asn Cys Thr Phe Gly Gly Ile  
 305 310 315 320  
 Trp Asn Gly Gly Gly Asn Gly Gln Lys Asn Leu Phe Ala Ser Ser  
 325 330 335  
 Ser Phe Phe Tyr Leu Pro Glu Asp Thr Gly Met Val Asp Ala Ser Thr  
 340 345 350  
 Pro Asn Phe Ile Leu Arg Pro Val Asp Ile Glu Thr Lys Ala Lys Glu  
 355 360 365  
 Ala Cys Ala Leu Asn Phe Glu Asp Ala Lys Ser Thr Tyr Pro Phe Leu  
 370 375 380  
 Asp Lys Lys Asn Val Ala Ser Tyr Val Cys Met Asp Leu Ile Tyr Gln  
 385 390 395 400  
 Tyr Val Leu Leu Val Asp Gly Phe Gly Leu Asp Pro Leu Gln Lys Ile  
 405 410 415  
 Thr Ser Gly Lys Glu Ile Glu Tyr Gln Asp Ala Ile Val Glu Ala Ala  
 420 425 430  
 Trp Pro Leu Gly Asn Ala Val Glu Ala Ile Ser Ala Leu Pro Lys Phe  
 435 440 445  
 Glu Arg Leu Met Tyr Phe Val  
 450 455

<210> 11

<211> 454

<212> PRT

<213> Solanum tuberosum

<400> 11

Met Leu Asn Gln Asn Ser His Phe Ile Phe Ile Ile Leu Ala Ile Phe  
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Leu Val Leu Pro Leu Ser Leu Leu Ser Lys Asn Val Asn Ala Gln Ile  
 20 25 30

Pro Leu Arg Arg His Leu Leu Ser His Glu Ser Glu His Tyr Ala Val  
 35 40 45  
 Ile Phe Asp Ala Gly Ser Thr Gly Ser Arg Val His Val Phe Arg Phe  
 50 55 60  
 Asp Glu Lys Leu Gly Leu Leu Pro Ile Gly Asn Asn Ile Glu Tyr Phe  
 65 70 75 80  
 Met Ala Thr Glu Pro Gly Leu Ser Ser Tyr Ala Glu Asp Pro Lys Ala  
 85 90 95  
 Ala Ala Asn Ser Leu Glu Pro Leu Leu Asp Gly Ala Glu Gly Val Val  
 100 105 110  
 Pro Gln Glu Leu Gln Ser Glu Thr Pro Leu Glu Leu Gly Ala Thr Ala  
 115 120 125  
 Gly Leu Arg Met Leu Lys Gly Asp Ala Ala Glu Lys Ile Leu Gln Ala  
 130 135 140  
 Val Arg Asn Leu Val Lys Asn Gln Ser Thr Phe His Ser Lys Asp Gln  
 145 150 155 160  
 Trp Val Thr Ile Leu Asp Gly Thr Gln Glu Gly Ser Tyr Met Trp Ala  
 165 170 175  
 Ala Ile Asn Tyr Leu Leu Gly Asn Leu Gly Lys Asp Tyr Lys Ser Thr  
 180 185 190  
 Thr Ala Thr Ile Asp Leu Gly Gly Gly Ser Val Gln Met Ala Tyr Ala  
 195 200 205  
 Ile Ser Asn Glu Gln Phe Ala Lys Ala Pro Gln Asn Glu Asp Gly Glu  
 210 215 220  
 Pro Tyr Val Gln Gln Lys His Leu Met Ser Lys Asp Tyr Asn Leu Tyr  
 225 230 235 240  
 Val His Ser Tyr Leu Asn Tyr Gly Gln Leu Ala Gly Arg Ala Glu Ile  
 245 250 255  
 Phe Lys Ala Ser Arg Asn Glu Ser Asn Pro Cys Ala Leu Glu Gly Cys  
 260 265 270  
 Asp Gly Tyr Tyr Ser Tyr Gly Gly Val Asp Tyr Lys Val Lys Ala Pro  
 275 280 285  
 Lys Lys Gly Ser Ser Trp Lys Arg Cys Arg Arg Leu Thr Arg His Ala  
 290 295 300  
 Leu Lys Ile Asn Ala Lys Cys Asn Ile Glu Glu Cys Thr Phe Asn Gly  
 305 310 315 320  
 Val Trp Asn Gly Gly Gly Gly Asp Gly Gln Lys Asn Ile His Ala Ser  
 325 330 335

Ser Phe Phe Tyr Asp Ile Gly Ala Gln Val Gly Ile Val Asp Thr Lys  
 340 345 350  
 Phe Pro Ser Ala Leu Ala Lys Pro Ile Gln Tyr Leu Asn Ala Ala Lys  
 355 360 365  
 Val Ala Cys Gln Thr Asn Val Ala Asp Ile Lys Ser Ile Phe Pro Lys  
 370 375 380  
 Thr Gln Asp Arg Asn Ile Pro Tyr Leu Cys Met Asp Leu Ile Tyr Glu  
 385 390 395 400  
 Tyr Thr Leu Leu Val Asp Gly Phe Gly Leu Asn Pro His Lys Glu Ile  
 405 410 415  
 Thr Val Ile His Asp Val Gln Tyr Lys Asn Tyr Leu Val Gly Ala Ala  
 420 425 430  
 Trp Pro Leu Gly Cys Ala Ile Asp Leu Val Ser Ser Thr Thr Asn Lys  
 435 440 445  
 Ile Arg Val Ala Ser Ser  
 450  
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 <211> 473  
 <212> PRT  
 <213> *Saccharomyces cerevisiae*  
 <400> 12  
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 Tyr Leu Gln Asp Ser Lys Thr Glu Gln Asn Tyr Pro Glu Leu Ala Asp  
 20 25 30  
 Ala Val Lys Ser Gln Thr Ser Gln Thr Cys Ser Glu Glu His Lys Tyr  
 35 40 45  
 Val Ile Met Ile Asp Ala Gly Ser Thr Gly Ser Arg Val His Ile Tyr  
 50 55 60  
 Lys Phe Asp Val Cys Thr Ser Pro Pro Thr Leu Leu Asp Glu Lys Phe  
 65 70 75 80  
 Asp Met Leu Glu Pro Gly Leu Ser Ser Phe Asp Thr Asp Ser Val Gly  
 85 90 95  
 Ala Ala Asn Ser Leu Asp Pro Leu Leu Lys Val Ala Met Asn Tyr Val  
 100 105 110  
 Pro Ile Lys Ala Arg Ser Cys Thr Pro Val Ala Val Lys Ala Thr Ala  
 115 120 125  
 Gly Leu Arg Leu Leu Gly Asp Ala Lys Ser Ser Lys Ile Leu Ser Ala  
 130 135 140



Val Arg Asp His Leu Glu Lys Asp Tyr Pro Phe Pro Val Val Glu Gly  
 145 150 155 160  
 Asp Gly Val Ser Ile Met Gly Gly Asp Glu Glu Gly Val Phe Ala Trp  
 165 170 175  
 Ile Thr Thr Asn Tyr Leu Leu Gly Asn Ile Gly Ala Asn Gly Pro Lys  
 180 185 190  
 Leu Pro Thr Ala Ala Val Phe Asp Leu Gly Gly Gly Ser Thr Gln Ile  
 195 200 205  
 Val Glu Glu Pro Thr Phe Pro Ile Asn Glu Lys Met Val Asp Gly Glu  
 210 215 220  
 His Lys Phe Asp Leu Lys Phe Gly Asp Glu Asn Tyr Thr Leu Tyr Gln  
 225 230 235 240  
 Phe Ser His Leu Gly Tyr Gly Leu Lys Glu Gly Arg Asn Lys Val Asn  
 245 250 255  
 Ser Val Leu Val Glu Asn Ala Leu Lys Asp Lys Ile Leu Lys Gly Cys  
 260 265 270  
 Asn Thr Lys Thr His Cys Leu Ser Ser Pro Cys Leu Pro Pro Lys Val  
 275 280 285  
 Asn Ala Thr Asn Glu Lys Val Thr Leu Glu Ser Lys Glu Thr Tyr Thr  
 290 295 300  
 Ile Asp Phe Ile Gly Pro Asp Glu Pro Ser Gly Ala Gln Cys Arg Phe  
 305 310 315 320  
 Leu Thr Asp Glu Ile Leu Asn Lys Asp Ala Gln Cys Gln Ser Pro Pro  
 325 330 335  
 Cys Ser Phe Asn Gly Val His Gln Pro Ser Leu Val Arg Thr Phe Lys  
 340 345 350  
 Glu Ser Asn Asp Ile Tyr Ile Phe Ser Tyr Phe Tyr Asp Arg Thr Thr  
 355 360 365  
 Arg Pro Leu Gly Met Pro Leu Ser Phe Thr Leu Asn Glu Leu Asn Asp  
 370 375 380  
 Leu Ala Arg Ile Val Cys Lys Gly Glu Glu Thr Trp Asn Ser Val Phe  
 385 390 395 400  
 Ser Gly Ile Ala Gly Ser Leu Asp Glu Leu Glu Ser Asp Ser His Phe  
 405 410 415  
 Cys Leu Asp Leu Ser Phe Gln Val Ser Leu Leu His Thr Gly Tyr Asp  
 420 425 430  
 Ile Pro Leu Gln Arg Glu Leu Arg Thr Gly Lys Lys Ile Ala Asn Lys  
 435 440 445

Glu Ile Gly Trp Cys Leu Gly Ala Ser Leu Pro Leu Leu Lys Ala Asp  
 450 455 460

Asn Trp Lys Cys Lys Ile Gln Ser Ala  
 465 470

<210> 13  
 <211> 153  
 <212> PRT  
 <213> Homo sapiens

<400> 13  
 Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr  
 1 5 10 15

Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His  
 20 25 30

Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val  
 35 40 45

Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg  
 50 55 60

Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr  
 65 70 75 80

Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu  
 85 90 95

Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr  
 100 105 110

Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly  
 115 120 125

Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln  
 130 135 140

Lys Thr Arg Trp Phe Ser Ile Val Pro  
 145 150

<210> 14  
 <211> 154  
 <212> PRT  
 <213> Rattus norvegicus

<400> 14  
 Val Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Asn Leu  
 1 5 10 15

Tyr Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val  
 20 25 30

Gln Leu Leu Glu Glu Cys Gln Val Lys Gly Pro Gly Ile Ser Lys Tyr  
 35 40 45

Ala Gln Lys Thr Asp Glu Ile Ala Ala Tyr Leu Ala Glu Cys Met Lys  
50 55 60

Met Ser Thr Glu Arg Ile Pro Ala Ser Lys Gln His Gln Thr Pro Val  
65 70 75 80

Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Lys  
85 90 95

Gln Ser Ala Asp Glu Val Leu Ala Ala Val Ser Arg Ser Leu Lys Ser  
100 105 110

Tyr Pro Phe Asp Phe Gln Gly Ala Lys Ile Ile Thr Gly Gln Glu Glu  
115 120 125

Gly Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Arg Phe Thr  
130 135 140

Gln Glu Gln Ser Trp Leu Asn Phe Ile Ser  
145 150

<210> 15

<211> 153

<212> PRT

<213> Homo sapiens

<400> 15

Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Met Phe  
1 5 10 15

Ile Tyr Lys Trp Pro Ala Asp Lys Glu Asn Asp Thr Gly Ile Val Gly  
20 25 30

Gln His Ser Ser Cys Asp Val Pro Gly Gly Gly Ile Ser Ser Tyr Ala  
35 40 45

Asp Asn Pro Ser Gly Ala Ser Gln Ser Leu Val Gly Cys Leu Glu Gln  
50 55 60

Ala Leu Gln Asp Val Pro Lys Glu Arg His Ala Gly Thr Pro Leu Tyr  
65 70 75 80

Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Asn Leu Thr Asn Pro Glu  
85 90 95

Ala Ser Thr Ser Val Leu Met Ala Val Thr His Thr Leu Thr Gln Tyr  
100 105 110

Pro Phe Asp Phe Arg Gly Ala Arg Ile Leu Ser Gly Gln Glu Glu Gly  
115 120 125

Val Phe Gly Trp Val Thr Ala Asn Tyr Leu Leu Glu Asn Phe Ile Lys  
130 135 140

Tyr Gly Trp Val Gly Arg Trp Phe Arg  
145 150

<210> 16  
 <211> 150  
 <212> PRT  
 <213> Gallus gallus

<400> 16  
 Phe Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ala Val  
 1 5 10 15  
 Phe Ile Tyr Lys Trp Pro Ala Asp Lys Glu Asn Asp Thr Gly Val Val  
 20 25 30  
 Ser Glu His Ser Met Cys Asp Val Glu Gly Pro Gly Ile Ser Ser Tyr  
 35 40 45  
 Ser Ser Lys Pro Pro Ala Ala Gly Lys Ser Leu Glu His Cys Leu Ser  
 50 55 60  
 Gln Ala Met Arg Asp Val Pro Lys Glu Lys His Ala Asp Thr Pro Leu  
 65 70 75 80  
 Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Thr Ile Ala Asp Pro  
 85 90 95  
 Pro Ser Gln Thr Cys Leu Ser Ala Val Met Ala Thr Leu Lys Ser Tyr  
 100 105 110  
 Pro Phe Asp Phe Gly Gly Ala Lys Ile Leu Ser Gly Glu Glu Glu Gly  
 115 120 125  
 Val Phe Gly Trp Ile Thr Ala Asn Tyr Leu Leu Glu Asn Phe Ile Lys  
 130 135 140  
 Arg Gly Trp Leu Gly Glu  
 145 150

<210> 17  
 <211> 148  
 <212> PRT  
 <213> Caenorhabditis elegans

<400> 17  
 Ile Lys Tyr Gly Val Ile Cys Asp Ala Gly Ser Ser Gly Thr Arg Leu  
 1 5 10 15  
 Phe Val Tyr Thr Leu Lys Pro Leu Ser Gly Gly Leu Thr Asn Ile Asp  
 20 25 30  
 Thr Leu Ile His Glu Ser Glu Pro Val Val Lys Lys Val Thr Pro Gly  
 35 40 45  
 Leu Ser Ser Phe Gly Asp Lys Pro Glu Gln Val Val Glu Tyr Leu Thr  
 50 55 60  
 Pro Leu Leu Arg Phe Ala Glu Glu His Ile Pro Tyr Glu Gln Leu Gly  
 65 70 75 80

Glu Thr Asp Leu Leu Ile Phe Ala Thr Ala Gly Met Arg Leu Leu Pro  
85 90 95

Glu Ala Gln Lys Asp Ala Ile Ile Lys Asn Leu Gln Asn Gly Leu Lys  
100 105 110

Ser Val Thr Ala Leu Arg Val Ser Asp Ser Asn Ile Arg Ile Ile Asp  
115 120 125

Gly Ala Trp Glu Gly Ile Tyr Ser Trp Ile Ala Val Asn Tyr Ile Leu  
130 135 140

Gly Arg Phe Asp  
145

<210> 18  
<211> 10  
<212> RNA  
<213> Mus musculus

<400> 18  
aagaauaugg 10

<210> 19  
<211> 10  
<212> RNA  
<213> Vertebrate

<400> 19  
gccgccaugg 10

<210> 20  
<211> 20  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 20  
ccagactgta aatcttttgg 20

<210> 21  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 21  
agggaaatgta ataagggtag 20

<210> 22  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: Primer  
  
 <400> 22  
 ctgcttgagt gacgtctctg 20  
  
 <210> 23  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
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 <223> Description of Artificial Sequence: Primer  
  
 <400> 23  
 cacatgaggt tcagctctg 20  
  
 <210> 24  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: Primer  
  
 <400> 24  
 gtgaagtggc tgccttcagg 20  
  
 <210> 25  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: Primer  
  
 <400> 25  
 cctttgactc gggactccag 20  
  
 <210> 26  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: Primer  
  
 <400> 26  
 gaactgctgc ctaaccactc 20

<210> 27  
<211> 21  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 27  
attgatgggt cttgggattg c 21

<210> 28  
<211> 10  
<212> RNA  
<213> Homo sapiens

<400> 28  
augugaauga 10

<210> 29  
<211> 10  
<212> RNA  
<213> Homo sapiens

<400> 29  
acaaggauga 10